

# Notice of Allowability

Application No.

10/606,373

Examiner

Devona E. Faulk

Applicant(s)

AVENDANO ET AL.

Art Unit

2615

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/1/2007.
2. ☒ The allowed claim(s) is/are 1-6,8,12-15,17 and 19-38.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  5. ☒ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date 2/1/2007
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Remarks***

1. Claims 18 and 20-32 were indicated as allowable in the previous office action. The applicant has amended independent claim 1 with indicated allowable subject matter and rewritten dependent claims 20,23,26 in independent form. Claim 33 recites a system for carrying out the method of claim 26.
2. Claims 7,9-11,16,18 are cancelled.
3. Claims 1-6,8,12-15,17,19-33 are allowed.

### ***Drawings***

4. The drawings are objected to because of poor line quality with the drawings and the informal labeling of the Figures (i.e. the label Fig.1 appears to have been written by hand). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

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application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **EXAMINER'S AMENDMENT**

5. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with William J. James (Reg. No. 40,661) on 4/12/2007.

The claims are to be amended as follows:

**Claim 38, line 1:** before "computer", insert - - computer readable medium encoded with a - - .

**Claim 38, line 2:** after "product", delete "being embodied in a computer readable medium and ".

### ***Reasons For Allowance***

6. Claims 1-6,8,12-15,17,19-38 are allowed. The following is an examiner's statement of reasons for allowance: Regarding claims 1,20,23,26 and 33, prior art Hermansky et al. (US 6,098,038) discloses a method and system for adaptive speech

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enhancement using frequency specific signal-to-noise ratio estimates including processing successive portions of the audio signal using a subband filter bank; applying a nonlinear modification to the output of the subband filter bank output for each successive portion; and processing the modified subband filter bank output for each successive portion using an appropriate synthesis subband filter bank to generate a modified time-domain audio signal. Prior art Steven Boll *discloses Suppression of Acoustic Noise in Speech Using Spectral Subtraction*. Prior art Goff (US 6,317,117) discloses a user interface for the control of an audio spectrum filter processor. Prior art Hermansky et al. (US 5,878,389) discloses a method and system for generating an estimated clean speech signal from a noisy speech signal. Prior art Peevers (US 6,182,042) discloses sound modification employing spectral warping techniques. Prior art Dolson (US 6,112,169) discloses a system for Fourier Transform-based modification of audio.

Regarding claim 1, the prior art or combination thereof fails to disclose or make obvious "wherein applying a nonlinear modification comprises processing the output of the subband filter bank for successive portions of the audio signal using a filter bank comprising a nonlinear filter the response of which is determined at least in part by a first time constant for portions of the audio signal in which spectral magnitude is increasing and by a second time constant for portions of the audio signal in which spectral magnitude is decreasing".

Regarding claim 20, the prior art or combination thereof fails to disclose or make obvious "wherein applying a nonlinear modification comprises raising the modified

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spectral magnitude to an exponent and dividing the result by the corresponding original spectral magnitude to obtain a modification factor”.

Regarding claim 23, the prior art or combination thereof fails to disclose or make obvious “ wherein applying a nonlinear modification comprises calculating a modification ration equal to the modified spectral magnitude divided by the corresponding original spectral magnitude”.

Regarding claims 26,33 and 38, the prior art or combination thereof fails to disclose “wherein the step of applying a nonlinear modification to the output of the subband filter bank for each successive portion of the audio signal comprises: defining a first frequency band, and determining a modified spectral magnitude for the output of the subband filter bank for said first frequency band; and using the modified spectral magnitude to determine a modified subband filter bank output for said first frequency band” and “ wherein the processor is configured to apply a nonlinear modification to the output of the subband filter bank for each successive portion of the audio signal comprises: defining a first frequency band, and determining a modified spectral magnitude for the output of the subband filter bank for said first frequency band; and using the modified spectral magnitude to determine a modified subband filter bank output for said first frequency band” respectively.

Therefore the prior art or combination thereof fails to disclose or make obvious a system and method for enhancing an audio signal as claimed.

Claims 2-6,8,12-15,17,19,21,22,24,25,27-32,34-37 are allowed due to dependency on claims 1,20,23,26 and 32.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Devona E. Faulk whose telephone number is 571-272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848.

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2615. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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